21P111 (Pages: 2) Name: .....

Reg.No: .....

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE1 C02 - ELEMENTARY INORGANIC CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours Maximum : 30 Weightage

Section A

Answer any ***eight*** questions. Each question carries 1 weightage.

1. What is meant by an aprotic solvent? What are different classes of aprotic solvents and give examples of each class.
2. What happens when P4O10 reacts with water?
3. What is silicides?
4. What is the action of borazine on HCl?
5. How will you account for the abrupt changes in Ellingham diagram.
6. Write the synthesis of any two uranyl compounds.
7. Predict the particle ejected in the nuclear reaction 63Co + p → 52Fe.
8. Briefly explain Fricke dosimeter.
9. Desscribe template-assisted synthesis of nanomaterials.
10. Explain the applications of X- ray diffraction studies.

(8 × 1 = 8 Weightage)

Section B

Answer any ***six*** questions. Each question carries 2 weightage.

11. Explain any three acid base concepts with suitable examples and discuss their limitations.
12. a) Write a note on superacids.
    b) Where is the acidic site in the SO_3 molecule? Draw structures to explain your answer.
13. Derive the Styx code for B4H10.

14. Give the synthesis of (SN)x and outline the mechanism of polymerisation. What is the unusual property observed in this polymer?

15. What are zeolites? Mention important applications of zeolites.

16. What are heteropoly anions? Discuss one heteropoly anion formed by metatungstate ion

17. Outline the synthesis of super heavy elements.

18. Write a short note on surface plasmon resonance (SPR)

(6 × 2 = 12 Weightage)

Section C

Answer any **two** questions. Each question carries 5 weightage.

19. Briefly discuss the HSAB theory of acids and bases and its applications.

20. Give an account of the synthesis, structure, bonding and uses of phosphorus-nitrogen and sulphur-nitrogen compounds.

21. Explain Latimer and Frost diagrams. Discuss their applications.

22. Graphene-mother of all graphitic forms. Substantiate the statement. Give an account on the electronic and physical properties of different allotropes of Carbon.

(2 × 5 = 10 Weightage)

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